Message

From: Wong, Gifford J [WongG@state.gov]
Sent: 12/6/2017 9:41:00 PM
To: Schwier, Allison N [SchwierAN@state.gov]
CC: Wong, Gifford J [WongG@state.gov]
Subject: China Energy and Environment News 12-06-2017
Attachments: China Energy and Environment News 12-06.docx; Battlefield-Singularity-November-2017.pdf

All,

Happy Wednesday! I'm new to the E&E newsletter game and have a bit of a news learning curve to contend with. This edition covers items from the first part of last week. Today's newsletter focuses on Science and AI, Space, Energy and Green technology, Health and pollution, and Carbon emissions.

Also attached is the public report on AI released by the Center for a New American Security referenced in one of the news articles.

Cheers,
Giff

China could peak carbon emissions in 2023

S&T/AI

China to speed up IPv6-based Internet development

BEIJING, Nov 26 (Xinhua) – China plans to put the Internet Protocol version 6 (IPv6)-based network into large-scale use, to boost the development of the Internet industry.

The country aims to have 200 million active users of IPv6 by the end of 2018, while the number will exceed 500 million by 2020, according to an action plan issued by the general offices of the Communist Party of China Central Committee and the State Council.

By the end of 2025, network, applications and terminal devices will fully support the adoption of IPv6 in China, and it will have the largest number of IPv6 users in the world, according to the plan.

Computers, mobile phones, electronic devices and sensors that are connected to the Internet need a unique Internet Protocol address to identify themselves and communicate with each other.

The addresses used predominantly on the Internet are based on a communication standard known as IPv4, whose supply of addresses is running out.

The IPv6 network, first developed in the 1990s in China, allows a much higher theoretical limit on the number of IP addresses than the current IPv4 system.

http://news.xinhuanet.com/english/2017-11/26/c_136780735.htm

China's A.I. Advances Help Its Tech Industry, And State Security

BEIJING, Dec 3 (NYTimes) – During President Trump's visit to Beijing, he appeared on screen for a special address at a tech conference.

First he spoke in English. Then he switched to Mandarin Chinese.

Mr. Trump doesn't speak Chinese. The video was a publicity stunt, designed to show off the voice capabilities of iFlyTek, a Chinese artificial intelligence company with both innovative technology and troubling ties to Chinese state security.

IFlyTek has said its technology can monitor a car full of people or a crowded room, identify a targeted individual's voice and record everything that person says.

"IFlyTek," the image of Mr. Trump said in Chinese, "is really fantastic."

As China tests the frontiers of artificial intelligence, iFlyTek serves as a compelling example of both the country's sci-fi ambitions and the technology's darker dystopian possibilities.

The Chinese company uses sophisticated A.I. to power image and voice recognition systems that can help doctors with their diagnoses, aid teachers in grading tests and let drivers control their cars with their voices. Even some global companies are impressed: Delphi, a major American auto supplier, offers iFlyTek's technology to carmakers in China, while Volkswagen plans to build the Chinese company's speech recognition technology into many of its cars in China next year.

At the same time, iFlyTek hosts a laboratory to develop voice surveillance capabilities for China's domestic security forces. In an October report, a human rights group said the company was helping the authorities compile a biometric voice database of Chinese citizens that could be used to track activists and others.

Those tight ties with the government could give iFlyTek and other Chinese companies an edge in an emerging new field. China's financial support and its loosely enforced and untested privacy laws give Chinese companies considerable resources and access to voices, faces and other biometric data in vast quantities, which could help them develop their technologies, experts say.

China "does not have the stringent privacy laws that Western companies have, nor are Chinese citizens against having their data collected, as (arguably speaking) government monitoring is a fact of China," analysts with the research firm Sanford C. Bernstein wrote in a report in November.

Already, China's companies have at times edged out foreign rivals. IFlyTek has won major competitions for speech recognition and translation. Two years before Microsoft did, Baidu, the Chinese internet search company, created software capable of matching human skills at understanding speech. This year the Shanghai-based start-up Yitu took first place in a major facial recognition contest run by the United States government.

IFlyTek and other Chinese companies say they follow China's laws and protect user data. But they agree that the sheer number of users in China, plus the government's single-minded drive to dominate the new technology, puts them at an advantage.

"China has entered the artificial intelligence age together with the U.S.," said Liu Qingfeng, iFlyTek's chairman, at the Beijing conference. "But due to the advantage of a huge amount of users and China's social governance, A.I. will develop faster and spread from China to the world."

An iFlyTek spokeswoman said the company had yet to receive required permission from officials in Anhui, the Chinese province where it is based, to speak with the foreign news media.

IFlyTek is portrayed in the Chinese media both as a technology innovator and as an ally of the government. Last year iFlyTek helped prevent the loss of about $75 million in telecommunications fraud by helping the police target scammers, according to The Global Times, a nationalist tabloid controlled by the Communist Party. Its article quotes a Chinese security official as saying collecting voice patterns is like taking fingerprints or recording people with closed-circuit television cameras, meaning the practice does not violate their privacy.

"We work with the Ministry of Public Security to pin down the criminals," said Liu Junfeng, the general manager of the company's automotive business, at a conference in September.

Where iFlyTek gets its data is not clear. But one of its owners is China Mobile, the state-controlled cellular network giant, which has more than 800 million subscribers. IFlyTek preloads its products on millions of China Mobile phones and runs the hotline service for China Mobile, which did not respond to a request for comment.

"Data is gold," said Anil Jain, a professor who studies biometrics at Michigan State University. "These days you cannot design an accurate and robust recognition system for anything" without data.

Cars could be another major market, iFlyTek believes. China is pioneering a push into self-driving cars, which could heavily depend on voice technology. In September, iFlyTek introduced a new product, a glowing ellipsoid that mounts on a dashboard and listens for questions that it can check online, like a car-mounted Siri.

"We have to understand if the car is our friend, if there is an emotional connection," Mr. Liu said.

Through a third-party supplier, a few hundred thousand of the four million cars that the Volkswagen Group sells in China annually will be equipped next year with iFlyTek voice recognition technology, said Christoph Ludewig, a spokesman for the German automaker. Volkswagen said it requires that any data gathered from drivers is kept anonymous.

"Volkswagen will protect customers from the misuse of their data," Mr. Ludewig said.

Delphi, the American auto parts giant, said it had a relationship with iFlyTek to offer its services in China but declined to disclose details.

Mr. Liu, the head of iFlyTek's automotive business, said that the company's systems would be installed next year in some Jeeps sold in China and that it was developing automotive voice systems with Daimler, which owns the Mercedes-Benz brand. FiatChrysler, Jeep's parent, said it had not found any of its suppliers using iFlytek. A Daimler spokeswoman said that the company was regularly in discussions with potential suppliers but declined to say if iFlyTek was one of them.

Human rights groups worry that such rapidly evolving capabilities will be abused by China's autocratic government.

"The Chinese government has been collecting the voice patterns of tens of thousands of people with little transparency about the program or laws regulating who can be targeted or how that information is going to be used," Sophie Richardson, Human Rights Watch's China director, wrote in a report in October.

In its home province of Anhui, iFlyTek has assembled a database of 70,000 voice patterns, according to the report, which also said that the police had begun collecting records of voice patterns as they would fingerprints. The report cited as one example three women suspected of being sex workers whose voices were registered in a database, it said, in part because they had been arrested in Anhui.

The local Chinese media has also reported about a new plan in Anhui to scan voice calls automatically for the voice-prints of wanted criminals, and alert the police if they are detected.

IFlyTek did not respond to requests for comment on the Human Rights Watch report but has said its data-gathering efforts will not stop, particularly as it participates in China's push to develop self-driving cars.

"We are always talking about big data — the vehicle produces many images every day," said Mr. Liu, the iFlyTek automotive executive.

https://www.nytimes.com/2017/12/03/business/china-artificial-intelligence.html

Bill Gates elected as a member of China's top academic institution

Nov 27 (People's Daily Online) – Microsoft co-founder Bill Gates has been elected as a foreign academician of the Chinese Academy of Engineering (CAE), one of China's top academic institutions, together with 17 other foreigners.

Now, Gates stands shoulder to shoulder with 66 other prominent Chinese and foreign scientists who have been elected in 2017.
Election as a foreign member of CAE is a lifelong honor that is expected to build up the institution, promote international cooperation and exchanges, and improve CAE's status in the field of engineering.
In September, TerraPower, a Bill Gates-led company, established a joint venture with China National Nuclear Corporation, with the aim of building and operating small, medium, and large traveling-wave nuclear power plants in the next 20 years.
Earlier this month, Chinese Premier Li Keqiang called for closer cooperation with the US in developing next-generation nuclear power technology in his meeting with Bill Gates.
TerraPower cherishes the cooperation with its Chinese counterpart, values China's rich talent resources, and will take an open attitude to translate their shared cooperation vision into reality, said Gates.
http://en.people.cn/n3/2017/1127/c90000-9297429.html

China to establish six national research centers

BEIJING, Nov 28 (Xinhua) – China will build six new national research centers in a bid to transform the country into a leading power in science and technology, the Ministry of Science and Technology announced Monday.
The six are Beijing national research center for molecular sciences, Wuhan national research center for optoelectronics, Beijing national research center for condensed matter physics, Beijing national research center for information science and technology, Shenyang national research center for material science, Hefei national research center for physical sciences at the microscale.
The centers will be based on the current pilot national laboratories and discipline clusters, said Ye Yujiang, head of the ministry basic research department.
The ministry will speed up the building of the six national research centers and initiate new centers at proper time, Ye said, adding the country will initially establish a national research center system by 2020.
China has set the targets of establishing itself as one of the most innovative countries by 2020 and a leading innovator by 2030 before becoming a world-leading S&T power by the centenary anniversary of the founding of the People's Republic of China in 2049.
http://news.xinhuanet.com/english/2017-11/28/c_136783301.htm

China racing for AI military superiority over US, says report

China, no longer technologically inferior to America, has become a peer that may have the capability to overtake it, American think tank study warns
Nov 28 (SCMP) – A research arm of the US intelligence community just wrapped up a competition to see who could develop the best facial recognition technology. The challenge: identify as many passengers as possible walking on an aircraft boarding ramp.
Of all the entries, it was a Chinese start-up company called Yitu Tech that walked away with the US$25,000 prize this month, the highest of three cash awards.
The competition was one of many examples cited in a report by a US-based think tank about how China's military might leverage its country's rapid advances in artificial intelligence to modernise its armed forces and, potentially, seek advantages against the United States.
"China is no longer in a position of technological inferiority relative to the United States, but rather has become a true peer (competitor) that may have the capability to overtake the United States in AI," said the report, written by Elsa Kania at the Centre for a New American Security, due to be released on Tuesday.
Future US-China competition in AI, Kania wrote, "could alter future economic and military balances of power".
Alphabet Inc's Executive Chairman Eric Schmidt, who heads a Pentagon advisory board, delivered a similar warning about China's potential at a recent gathering in Washington.
Schmidt noted that China's national plan for the future of artificial intelligence, announced in July, calls for catching up with the United States in the coming years and eventually becoming the world's primary AI innovation centre.
"I'm assuming that our lead will continue over the next five years and that China will catch up extremely quickly. So, in five years we'll kind of be at the same level, possibly," Schmidt said told the conference, which was also hosted by the Centre for a New American Security.

An unreleased Pentagon document, viewed by Reuters, warned earlier this year that Chinese firms were skirting US oversight and gaining access to sensitive US AI technology with potential military applications by buying stakes in American firms.
In response, a bipartisan group of lawmakers in the US Senate and House of Representatives this month introduced bills to toughen US foreign investment rules.
The centre's report noted the Chinese acquisitions and said Beijing faces hurdles to forging a domestic AI industry to rival the United States, including recruiting top talent.
Schmidt, however, expressed confidence in China's ability.
"If you have any kind of ... concern that, somehow their system and educational system is not going to produce the kind of people that I'm talking about, you're wrong," he said.
Artificial intelligence, which promises to revolutionise transportation with the advent of self-driving cars and bring major advances to medicine, is also expected to have military applications that could alter the battlefield.
Some machine learning technology is already being applied to a Pentagon project that aims to have computers help sift through drone footage, reducing the work for human analysts.
China's People's Liberation Army is also investing in a range of AI-related projects and PLA research institutes are partnering with the Chinese defence industry, the report said, citing publicly available documents.
"The PLA anticipates that the advent of AI could fundamentally change the character of warfare," the report said.
Kania acknowledged that much of her research was speculative, given the early stages of AI development and policies surrounding it in China and elsewhere.
Still, she said some PLA thinkers anticipate the approach of a "singularity" on the battlefield, where humans can no longer keep pace with the speed and tempo of machine-led decisions during combat, the report said.
The report quoted PLA Lieutenant General Liu Guozhi, the director of the Central Military Commission's Science and Technology Commission, warning "[we] must ... seize the opportunity to change paradigms."
Although Pentagon policy currently calls for a human role in offensive actions carried out by machines, it was unclear whether China's People's Liberation Army would adopt such a policy, the report said.
"The PLA may leverage AI in unique and perhaps unexpected ways, likely less constrained by the legal and ethical concerns prominent in US thinking," Kania wrote.
http://www.scmp.com/news/china/diplomacy-defence/article/2121923/china-racing-ai-military-superiority-over-us-says

Baidu and Xiaomi are working together on internet of things and artificial intelligence

Nov 27 (TechCrunch) -- Baidu, China's answer to Google, and Xiaomi, which has modeled itself on the success of the America's most successful technology manufacturer in Apple, have announced a strategic partnership to tackle two emerging technologies, internet of things and artificial intelligence.
Announced today at Xiaomi's first developer conference in Beijing, the alliance is a marriage between the third most valuable publicly traded Chinese technology company in Baidu and one of the world's most valuable private firms, Xiaomi.
Clocking in with a market capitalization of $86 billion, Baidu is no slouch on the global technology stage — with AI and deep learning among its core focuses — while Xiaomi has become a key player in China and made inroads in emerging markets like India thanks to its affordable phones and smart devices which punch well above their price tag.
The duo are announcing a collaboration for the first time, but TechCrunch understands that Baidu's conversational operating system — DuerOS — is already present in some Xiaomi hardware. That's little known because it was left unbranded, but now the companies have made their partnership official.
Exact details of the tie-up are not being disclosed right now, but the two firms said will immediately explore opportunities in voice recognition, deep learning and computer vision, in addition to more work with DuerOS. Further to that, Baidu's tech reach also extends into robotics, AR, VR and self-driving cars, which could also be areas of joint cooperation in the future for Xiaomi.
Even if the two companies are just partnering for the domestic Chinese market a real partnership that does more than pay lip service to the potential benefits of technology sharing would make each far more competitive than either one on their own.
Baidu has favored a partnership based approach with hardware makers to get DuerOS and other tech into the hands of consumers. The company doesn't charge a license fee for the OS — the same applies to this Xiaomi deal — and it claims to work with 130 companies that cover smartphones, smart TVs, smartwatches and home appliances.

Most notably, it recently released details of its first smart speaker, the very uniquely designed Raven series. The product was the fruit of its acquisition of hardware startup Raven earlier this year, but Baidu also roped in Sweden's Teenage Engineering, which is known for pushing the envelope on hardware design.
https://techcrunch.com/2017/11/27/xiaomi-baidu-iot-ai/

Space

Three Chinese military surveillance satellites successfully launched

SpaceflightNow, Nov 26 – A Chinese rocket placed three experimental military surveillance satellites in orbit Friday, the second set of related triplets launched in less than two months.
The satellites lifted off aboard a Long March 2C rocket from the Xichang launch base in southwest China's Sichuan province at 1810 GMT (1:10 p.m. EST) Friday, according to the state-run Xinhua news agency.
Liftoff occurred at 2:10 a.m. Saturday Beijing time.
The two-stage Long March 2C booster deployed the three Yaogan 30-02 spacecraft in an orbit around 370 miles (600 kilometers) above Earth, inclined 35 degrees to the equator, according to tracking data released by the U.S. military. Chinese officials declared the launch a success.
The circumstances of Friday's launch match another Chinese mission Sept. 29, in which a Long March 2C rocket placed three satellites into the same type of orbit. The satellites launched Friday were injected in an orbit with a track around 120 degrees west of the Yaogan 30-01 trio launched in September.
State media reported the satellites will be used for electromagnetic observations and other experiments.
The Yaogan series of satellites are believed to be operated by the Chinese military for intelligence-gathering purposes. Some analysts suggested the satellite triplets launched Sept. 29 and on Friday could be testing new electronic eavesdropping equipment or helping the Chinese military track U.S. and other foreign naval deployments.
These Chinese military has another satellite named Yaogan 30, which analysts believe is an optical spy craft in a polar orbit.
The Yaogan 30-01 and 30-02 satellite groups were built by the Chinese Academy of Sciences Institute of Micro-satellite Innovation, according to Xinhua.
A third Yaogan 30 triplet is expected to launch in early 2018.
Friday's launch marked the 13th Chinese space launch attempt of the year. Twelve of the missions successfully reached orbit.
https://spaceflightnow.com/2017/11/26/three-chinese-military-surveillance-satellites-successfully-launched/

Could ghost imaging spy satellite be a game changer for Chinese military?

Scientists are developing a probe to track stealth bombers at night
SCMP, Nov 26 – China is developing a new type of spy satellite using ghost imaging technology that could change the game of military cat and mouse within a decade, according to scientists involved in the project.
Existing camouflage techniques – from simple smoke bombs used to hide tanks or soldiers on battlefields to the hi-tech radar absorption materials on a stealth aircraft or warship – would be of no use against ghost imaging, physics experts said.
Quantum ghost imaging can achieve unprecedented sensitivity by detecting not just the extremely small amount of light straying off a dim target, but also its interactions with other light in the surrounding environment to obtain more information than traditional methods.
A satellite equipped with the new quantum sensor would be able to identify and track targets that are currently invisible from space, such as stealth bombers taking off at night, according to researchers.
The Northrop Grumman B-2 Spirit operated by the United States is the world's only stealth bomber in service able to deliver a strategic strike on an enemy.
B-2s take flight mostly under the cover of night, in part to avoid high-definition optical cameras on spy satellites. They have a special coating to deflect or absorb microwaves of certain bandwidths produced by space-based synthetic aperture radars, as well as heat-suppression technology to dodge infrared sensors. Its successor, the B-21, is under development with improved but similar technologies. It is expected to enter service by 2025.

Gong Wenlin, research director at the Key Laboratory for Quantum Optics, Chinese Academy of Sciences in Shanghai – whose team is building the prototype ghost imaging device for satellite missions – said their technology was designed to catch "invisibles" like the B-2s.

He said his lab, led by prominent quantum optics physicist Han Shensheng, would complete a prototype by 2020 with an aim to test the technology in space before 2025. By 2030 he said there would be some large-scale applications.

While ghost imaging has already been tested on ground-based systems, Gong's lab is in a race with overseas competitors, including the US Army Research Laboratory, to launch the world's first ghost imaging satellite.

The team showed the engineering feasibility of the technology with a ground experiment in 2011. Three years later the US army lab announced similar results.

"We have beat them on the ground. We have confidence to beat them again in space," Gong said.

The ghost imaging satellite would have two cameras, one aiming at the targeted area of interest with a bucket-like, single pixel sensor while the other camera measured variations in a wider field of light across the environment.

The target could be illuminated by almost any light source such as the sun, moon or even a fluorescent light bulb. Alternatively, a pair of physically "entangled" or "correlated" laser beams could be generated from the satellite to light up the object and its surroundings.

By analysing and merging the signals received by the two cameras with a set of sophisticated algorithms in quantum physics, scientists could conjure up the imaging of an object with extremely high definition previously thought impossible using conventional methods.

Gong said darkness, cloud, haze and other negative elements impairing visibility would no longer matter.

"A ghost imaging satellite will reveal more details than the most advanced radar satellite," the research director said.

Because quantum imaging can collect data from a wide spectrum of light, the images they produce would look "more natural" to human eyes than the black-and-white radar images based on the echo of high-frequency electromagnetic waves of narrow bandwidths, he said.

The ghost camera could also identify the physical nature or even chemical composition of a target, according to Gong. This meant the military would be able to distinguish decoys such as fake fighter jets on display in an airfield or missile launchers hidden under a camouflage canopy.

Tang Lingli, a researcher with the Academy of Opto-Electronics, Chinese Academy of Sciences in Beijing, said numerous new devices had been built, tested in the field and were ready for deployment on ground-based radar stations, planes and airships.

"Satellite is the next step," she said.

Tang said ghost imaging could be achieved using different methods in either quantum or classical physics, and it would work best with other intelligence gathering methods including optical cameras and synthesised aperture radars.

"Each detection method has its unique advantages. It depends on the circumstances and nature of the mission as to which one should be used, if not all [of them]," said Tang, who is also the general secretary of the National Committee on Remote Sensing Technology Standardisation and a supervisor of the national ghost imaging project.

Xiong Jun, a professor of physics who studied quantum optics at Beijing Normal University, said ghost imaging could become a game changer for military operations.

Some 200 quantum optics scientists gather in China every year to share their new discoveries and the latest advances in engineering applications.

Xiong said he had seen ghost imaging used in ground-based radar systems and spy planes, but the satellite project had not been publicly discussed because of its sensitivity.

Many engineering challenges would have to be overcome to build such a satellite, he said.

If the satellite used a natural light source such as the sun and moon, it would need to have extremely fast sensors to detect the tiny changes in light down to a few nanoseconds – or one thousand-millionths of a second – and catch the quantum physics in action.

If it used an artificial light source such as a laser, it would need to be very powerful to reach a distant target near the ground.

But Xiong noted that China had built and run the world's first and only quantum satellite, which provided a large amount of experimental data – and engineering experience – for its scientists.

He said that satellite could generate a pair of entangled laser pulses and send them to different locations on the ground, and the ghost imaging satellite would use similar techniques.

"The theory of ghost imaging has been well established and understood," Xiong said. "The speed of application very much depends on the government and the amount of money it's willing to spend."

http://www.scmp.com/news/china/society/article/2121479/could-ghost-imaging-spy-satellite-be-game-changer-chinese

Energy and Green technology

Sinopec to sell Argentina oil assets for up to $600 mln

BUENOS AIRES, Nov 28 (Reuters) – China's Sinopec has decided to sell its oil assets in Argentina for $500 million to $600 million to Mexican company Vista Oil & Gas, a source with knowledge of the deal told Reuters on Tuesday.

The price would be far less than the $2.45 billion that Sinopec paid in 2010 to buy the Argentine assets from U.S.-based Occidental Petroleum Corp. The assets are located mainly in the southern province of Santa Cruz.

Vista VISTAA.MX declined to comment, as did Sinopec's representatives in Argentina.

Sinopec informed Vista of its decision on Monday, according to the source, who asked not to be named because the deal was confidential. Sinopec also told competing bidders including Argentina's state-controlled oil company YPF and private Argentine company Pluspetrol, the source said.

YPF and Pluspetrol declined to comment.

"Vista won the bidding for Sinopec's assets in Argentina," the source said in a telephone interview. "A period of contractual talks will start now."

Vista is looking to buy Latin American oil assets principally in Mexico, Argentina, Colombia and Brazil, according to the company's website.

"We believe there is an opportunity to acquire world-class assets in a region with abundant resources and that, in recent years, has become more open to investors," a statement on the website said.

Reuters reported last month that Sinopec, Asia's largest refiner, was weighing offers from about a dozen potential suitors as losses and labor headaches prompted it to pull out of Argentina.

In 2010, when Sinopec bought the Argentine assets, China - the world's No. 2 oil consumer - was scouting for natural resources to feed its surging economy. Labor unrest in Santa Cruz had "weighed" on the operation since then, Sinopec said in September last year.

Argentina's president, Mauricio Macri, has made attracting energy investment a priority since he took office in 2015. His government brokered a deal earlier this year to calm labor conflicts in Santa Cruz and lower business costs.

Argentina holds the world's second-largest shale fields but development has been stalled by high costs and frequent labor conflicts. Oil workers in Santa Cruz are known for being particularly combative.

https://www.reuters.com/article/argentina-sinopec-corp/sinopec-to-sell-argentina-oil-assets-for-up-to-600-mln-source-idUSE6N1M700X

China to Pump Brakes on Electric Vehicle Subsidies: Source

CAIXIN, Nov 22 (by Xiao Ying and Mo Yelin) – China is planning to make it harder for new-energy vehicle manufacturers to access subsidies and will phase out financial support by 2020, according to sources familiar with a closed-door meeting convened by regulators last week.

Authorities will slash new-energy vehicle subsidies by 20% next year, instead of in 2019 as originally planned, with the end of subsidies scheduled for after 2020, a source with knowledge of the matter said. Photo: Visual China

Separately, the Ministry of Public Security said the country will establish a unified system for new-energy vehicle license plates, and announced it rolled out a pilot project Monday in 12 cities nationwide, including Chengdu and Kunming.

The country's revised new-energy vehicle subsidy policy will raise the bar for companies looking to receive government handouts, including technology standards such as the energy density of batteries, according to people familiar with the matter.

The source also said that subsidies will be slashed by 20% next year, instead of in 2019 as originally planned, with the cessation of subsidies scheduled for after 2020.

Since 2010, both central and local authorities have been handing out generous subsidies to support electric vehicle (EV) research and provided incentives for consumers.

This drive has helped China become the world's largest EV market, with over 500,000 units sold last year, almost half the global output.

However the downsides of this policy have become apparent. Chinese authorities have started an investigation into overcapacity in the sector as entrepreneurs have swarmed into the market to tap lucrative state subsidies, a senior official with the Ministry of Finance said in October.

EV sales in China rose 45% year-on-year to 490,000 units in the first 10 months of 2017, according to official statistics.

Industry executives said the growing momentum in the sector has posed the government with immense fiscal challenges, which may have inspired authorities to move up the timetable for phasing out the subsidies.

Instead of providing subsidies, the government is preparing to roll out a quota system to continue promoting new-energy vehicles, starting from 2019. Under this system, companies making cars with fossil-fuel engines must buy credits from EV-makers or generate them themselves through sales of EVs and hybrids.

That means the burden of selling new-energy cars will be borne by automakers, which must ensure a certain ratio of their sales come from low- and zero-emission vehicles.

Industry executives have called for the government to provide clarity over the future of EV policies as soon as possible. One executive who declined to be named told Caixin that Beijing's policies have a direct influence on his business, and that he hopes uncertainties in the EV market can soon be dispelled.

https://www.caixinglobal.com/2017-11-22/china-to-pump-brakes-on-electric-vehicle-subsidies-source-101174670.html?mc_cid=17e7b44e75&mc_eid=50973a4ce9

$600 Million Loan Pumps Up China Huarong Energy's Oil Dreams in Kyrgyzstan

Nov 30 (Caixin) – China Huarong Energy Co. Ltd. has secured a $600 million loan to fund its Kyrgyzstan oil project, according to an announcement filed Wednesday with the Hong Kong Stock Exchange.

The loan, which will be received through a China Huarong Energy subsidiary, Crown Winner Investments Ltd., is expected give a much-needed boost to the project, which consists of four oil fields in the central Asian country's Fergana Valley.

China Huarong Energy acquired a 60% stake in the Kyrgyzstan project in 2014, when the company was still named China Rongsheng Heavy Industries Group.

But the project has been hindered by "the lack of means to fund additional investments for drilling wells and exploration," the privately owned company said.

China Huarong Energy had completed fracturing operations, testing and the drilling of 36 oil wells by mid-2015, but has not announced any progress since.

The company did not disclose who lent it the $600 million, but said it was an independent third party "whose principal business is investment holding."

Kyrgyzstan is one of the dozens of countries participating in China's Belt and Road initiative, which was introduced by President Xi Jinping in 2013 to bolster China's international trade and investment links. As of March, Kyrgyzstan has signed $1.81 billion worth of investment agreements with China, according to figures from Kazakhstan's Eurasian Research Institute.

But the announcement comes at a time when private oil firms face difficulty receiving funding for overseas downstream assets.

China Huarong Energy's investment in the Kyrgyzstan project was part of a wave of private Chinese investment in overseas oil assets which began in 2014 and has lately begun to subside, due to a combination of unexpected setbacks and tightening regulation.

These privately owned companies were locked out of upstream oil production by state-owned giants at home, and new to the challenges of managing oil fields. Some were new to the energy sector itself — China Huarong Energy was previously a major shipbuilding business.

https://www.caixinglobal.com/2017-11-30/600-million-loan-pumps-up-china-huarong-energys-oil-dreams-in-kyrgyzstan-101178449.html

Health & Pollution

Rising Chinese ozone levels cause higher mortality - study

SHANGHAI, Nov 27 (Reuters) – Rising ozone pollution in China's cities has emerged as a major health risk, causing a rise in deaths from strokes and heart disease among vulnerable residents, according to a new study by a team of Chinese researchers.

Data from 272 Chinese cities between 2013 and 2015 showed "robust evidence" linking rising short-term ozone exposure with increased mortality from cardiovascular and heart diseases as well as strokes, according to a paper published in the Environmental Health Perspectives journal.

Ground-level ozone, also known as photochemical smog, is caused by the interaction of sunlight with nitrogen oxides (NOx) and the vast amounts of uncontrolled volatile organic compounds (VOCs) produced by burning fossil fuels or producing chemicals.

China is waging a "war on pollution" to reverse the environmental damage done by nearly four decades of untrammelled economic growth. But much of the focus has been on reducing concentrations of small airborne particles known as PM2.5, especially in winter.

Kan Haidong, director of the department of public health at Shanghai's Fudan University, said while PM2.5 is currently a bigger contributor to China's overall disease burden, ozone is already equally significant in regions like the Pearl River delta.

"Ozone has been increasing in the past several years in China," said Kan, who was involved in the study. "In contrast, PM2.5 has decreased by about 30 percent in the past five years."

Lauri Myllyvirta, a Beijing-based campaigner with environmental group Greenpeace, said soaring ozone is partly a result of China's success in reducing PM2.5, which has increased the amount of sunlight, but China has lagged when it comes to tackling NOx and VOCs.

China's average ozone exposure increased 17 percent over 2014-2017, implying an additional 12,000 premature deaths per year, Greenpeace estimated, using data from China's environment ministry and the Global Burden of Disease (GBD) database (http://www.healthdata.org/gbd).
China launched a 2013-2017 action plan aimed at reducing average PM2.5 levels by 25 percent in targeted regions, but there was no target for ozone.
Liu Bingjiang, head of the air quality department at China's environment ministry, said in September that 59 out of 338 monitored cities exceeded the national ozone standard of 160 micrograms per cubic metre last year.
But he said while China was paying close attention to the problem, recent increases were "still a normal fluctuation".

https://www.reuters.com/article/us-china-pollution-ozone/rising-chinese-ozone-levels-cause-higher-mortality-study-idUSKBN1DR0LO

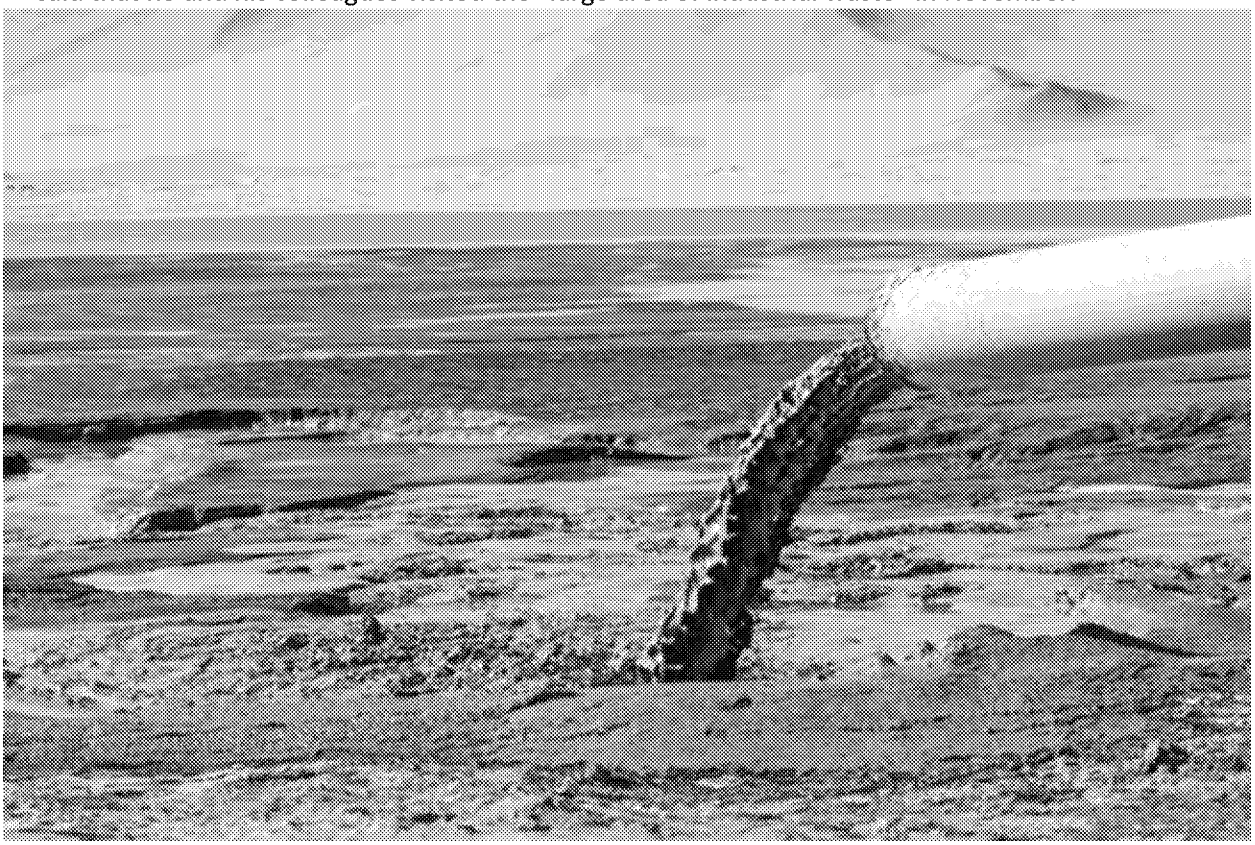
China's govt accuses four cities of air pollution failures

BEIJING, Nov 28 (Reuters) – Four cities in China's northeastern province Heilongjiang were accused by the Ministry of Environmental Protection (MEP) of increasing air pollution due to administrative failures.
"Despite a red alert for bad weather, the cities failed to enforce emergency measures to reduce emissions ... which missed the opportunity to ease pollution," the MEP said in a statement on Tuesday.
The cities of Harbin, Jiamusi, Shuangyashan and Hegang were covered in a blanket of chocking smog on Oct.18-20, with concentrations of hazardous particles, known as PM2.5, reaching over 400 micrograms.
China's official air quality standard is 35 micrograms, while the recommended level set by the World Health Organization should be no more than 10 micrograms.
To combat air pollution, Beijing has issued guidelines for temporary measures to curb emissions. Some industrial plants in the steel, aluminium, cement and ceramics sectors in northern part of the country were asked to limit production by up to 50 percent during the winter season.
Illegal crop straw burning, which was believed to be the main cause of the air pollution in four cities, was detected by the MEP using remote satellite sensors during the night.
The MEP also found utilisation data for crop straw in the cities had been forged. Almost 90 percent and 70 percent of the data reported by Shuangyashan and Hegang respectively in 2016 was found to have been exaggerated.
Some coal-fired power utilities such as plants controlled by state-backed China Huadian Corporation and Harbin Hatou Investment Co as well as some steel mills and coal producers were found not to be enforcing capacity cuts during red alerts.
Officials at the four cities have been given 20 working days to make improvement plans, the MEP said.
https://www.reuters.com/article/us-indonesia-volcano-china/china-suspends-flights-from-bali-to-china-due-to-volcanic-ash-report-idUSKBN1DY12H

Mining Company Investigated for Dumping Sludge in Qaidam Desert

Green group reported the factory for discharging vast tracts of cement-like waste.
Nov 28 (Sixth Tone) – Authorities in northwestern China are investigating an iron mining company after an environmental group revealed that its factory had been dumping massive amounts of liquid waste into the Qaidam Basin Desert, Sixth Tone's sister publication The Paper reported Friday.
Videos and photos posted to social media by the environmental NGO Guangzhou Green Data Environmental Service Center on Friday show several large pipes extending from a factory in Golmud, a city in Qinghai province, emitting gray liquid waste into the nearby desert. According to Green Data, tracts of the hardened, cement-like waste stretch 16 kilometers from the pipes.
"If the waste is classified as 'hazardous solid waste,' it could harm the soil and groundwater," Qi Biao, an engineer specializing in pollution treatment at the Qinghai Environmental Science Research Institute, told Sixth Tone on Monday. He added that he could not draw conclusions about the extent of the damage without seeing the results of a laboratory analysis.
A staff member at Green Data told Sixth Tone on Monday that the group discovered the waste deposits in early October, largely because Golmud Qinghua Mining, the company that owns the factory, was already on their watch list for

previous violations. The staff member — who would not give his name for fear of retaliation from the mining company — said that he and his colleagues visited the "large area of industrial waste" in November.



A pipe extending from a factory emits gray liquid waste into the nearby desert in Golmud, Qinghai province, Nov. 3, 2017. Courtesy of Green Data

In 2011, the company invested 1.85 billion yuan ($280 million) into its iron mining operation in Golmud. The factory, constructed that year to process up to 2.5 million tons of ore annually, passed its environmental impact assessment, carried out by the local government.

However, in 2015 the prefecture-level environmental protection bureau fined Golmud Qinghua Mining 20,000 yuan for not incorporating a water treatment system into its operation. Whether the company ever fulfilled this responsibility could not be determined.

When Sixth Tone contacted Zhang Shengjun, a communications representative for the company, he said he could not hear the questions clearly because of bad signal. His phone was turned off when Sixth Tone called back.

A deputy director at Golmud's environmental protection bureau surnamed Zhou told The Paper on Friday that the bureau had only recently learned about the situation and was sending a team to the scene over the weekend to conduct a full investigation. Green Data's staff member confirmed that they, too, are analyzing samples taken from the polluted land, and that results should be available later this week.

Another official from the environment bureau told Sixth Tone on Monday that a press conference will be held to announce the results of the city's investigation, though a date has not been set.

Similar cases of illegally dumped industrial waste have occurred elsewhere in China, especially in sparsely populated areas like Qinghai, where official oversight presents greater challenges.

In November 2014, media reports revealed that several companies had been emitting waste covering an area the size of several soccer fields in Inner Mongolia's Tengger Desert. A dozen companies were shut down and over 20 officials were suspended, in accordance with instructions directly from President Xi Jinping.

http://www.sixthtone.com/news/1001253/mining-company-investigated-for-dumping-sludge-in-qaidam-desert

China's Drug Monopolies in Regulators' Crosshairs

Following leukemia medication shortage, state bureau calls for strengthened supervision over drug prices and difficult-to-obtain ingredients.

Nov 27 (Sixth Tone) -- China's top economic regulator is stepping in to ensure that people with illnesses can continue to get their hands on potentially lifesaving medications.

On Aug. 30, Sixth Tone reported on the critical shortage of mercaptopurine, which treats patients with acute lymphoblastic leukemia, the most common form of leukemia in children.
One week ago, Premier Li Keqiang urged drug manufacturers to increase their supplies of the drug. Days later, the National Development and Reform Commission (NDRC) issued a guideline forbidding the market's biggest players from pricing drugs too high, scooping up rare ingredients on the cheap, or attempting to influence the market in their favor.
Mercaptopurine was once widely available in Chinese hospitals, where a bottle of 100 pills could be purchased for 100 yuan ($15). But as these supplies inexplicably began to run dry at the end of 2016, bottles of 50 pills for 200 yuan — a fourfold price hike — started appearing in private pharmacies. Even those who could still afford the medicine had a hard time getting it, as its manufacturers had exclusive contracts with a handful of pharmacies in Guangdong and Anhui provinces, in southern and eastern China, respectively.
Apart from the drugs themselves, prices for rare ingredients are spiraling out of control. Last week, state broadcaster China Central Television reported on retozide, an active ingredient in tuberculosis drugs. As recently as 2014, retozide could be purchased for 150 to 200 yuan per kilogram; in August 2015, however, its price had soared to 3,800 yuan per kilogram. Monopolistic practices by pharmaceutical companies in Tianjin and Zhejiang were reportedly to blame.
Even after being fined a total of 16 million yuan over the years for restricting access to certain drugs or ingredients, some pharma companies continued to operate in a legal gray area, according to CCTV's report.
"Some businesses had managed to control the market through underground channels," said Xu Xinyu, chief of the NDRC's anti-monopoly division. Xu was quoted by CCTV as saying that these companies had been unfairly selling commodities at extraordinarily high prices, or had purchased ingredients for suspiciously low prices by exerting influence over smaller, third-party suppliers.
The new guideline aims to restore a "fair market environment" by prohibiting such monopolistic behavior. The rules also stipulate that businesses cannot spread rumors, collude, hoard, profiteer, or engage in any other practice that would influence the market in their favor.
The NDRC has identified several categories of medical components that are in short supply in China, including vaccines, blood and blood products, radiopharmaceuticals, and traditional Chinese medicine ingredients.
When nine departments of the central government released a joint guideline addressing these shortages in June, Zeng Yixin, deputy head of the National Health and Family Planning Commission, revealed that of the 3,000 or so drugs approved for clinical use in China, around 130 are hard to obtain from time to time — whether due to small profit margins or stiff competition from larger manufacturers.
http://www.sixthtone.com/news/1001250/chinas-drug-monopolies-in-regulators-crosshairs

Xi Orders China's 'Toilet Revolution' To March On

BEIJING, Nov 27 (AFP)
China's president has ordered the country to march on in its "revolution" to clean up notoriously dirty and foul-smelling public bathrooms in a bid to improve quality of life and boost tourism.
The so-dubbed "toilet revolution" was launched in 2015 as part of efforts to make restrooms – often squat toilets with no paper – more tourist-friendly.
President Xi Jinping said the toilet problem "is not a small thing" and cleaning up is necessary to create a "civilised" urban and rural environment, China's state news agency Xinhua reported Monday.
The country expects to have added or upgraded more than 70,000 toilets by the end of this year.
Another 64,000 will be built or enhanced between 2018 and 2020, the National Tourism Administration has said in an action plan.
According to Xinhua, since taking office in 2012, Xi has made a point on rural tours to ask villagers whether they did their business in flushable toilets or pits dug into the ground.
"In rural areas, some toilets were little more than makeshift shelters surrounded by bunches of corn stalks, and some were open pits next to pigsties," the agency said.
"Local authorities are now more aware of the important role toilets play, believing better toilets are not only beneficial for tourism, but can also... enhance the overall level of civilisation of society."
China's infamous "squatty potties" arouse fear in some would-be tourists, with several tourism blog posts dedicated to the subject.
While studies have indicated that squatting may have health benefits over sitting, the position is still hard to accept for those accustomed to porcelain thrones.

Public bathrooms in China have also been known to be bereft of toilet paper thanks to enterprising crooks sneaking out entire rolls for their personal use. Facial recognition is now employed in some places to limit individual toilet paper portions.
Internet commenters applauded the restroom remodelling movement on Chinese microblogging site Weibo on Monday. "Support the toilet revolution," one user wrote. "Seriously, whether it's in a city or the countryside, when nature calls, it's always a hassle to find a decent bathroom."
https://www.yahoo.com/news/xi-orders-chinas-toilet-revolution-march-093149488.html

Carbon Emissions

China could peak carbon emissions in 2023

Greater energy efficiency could help China peak carbon faster than expected, new research argues.
Nov 23 (China Dialgoue) – China has an opportunity to peak its carbon emissions as soon as 2023, according to a recent research paper in the environmental science journal *Resources, Conservation and Recycling*.

China accounts for one quarter of global CO_2 emissions, so the timing of the country's carbon peak is crucial for the whole planet.

The authors of *China's energy revolution strategy into 2030* argue that by moving faster to deploy energy saving technology and restructure the manufacturing sector towards high-tech, high value added industries and light industry, China's carbon emissions could peak much earlier than the official goal of 2030.

Carbon deadline

Global carbon emissions must start falling in 2020, climate researchers say, or the world will face catastrophic consequences, including rising sea levels and worsening extreme weather events. Former chief UN climate negotiator Christiana Figueres launched the Mission2020 campaign in June to publicise the urgency of the situation.

The closer China's peak is to 2020, the better chance there is of the world achieving peak carbon in that year, as Yang Fuqiang, senior advisor to the National Resources Defense Council, pointed out ahead of the Paris Agreement two years ago.

However, researchers have made wildly differing predictions on when China will reach peak carbon.

The Global Carbon Project's latest study says China's CO_2 emissions are rising again after holding steady for three years, and will grow by 3.5% in 2017, driven by increased coal use and infrastructure construction. GCP released the study at last week's UN climate talks in Bonn.

In contrast, a 2016 a report from the Grantham Research Institute on Climate Change and the Environment and the ESRC Centre for Climate Change Economics and Policy at the London School of Economics held that China's carbon emissions had already peaked in 2014. Earlier research from the Lawrence Berkeley National Laboratory in the US forecast a peak between 2025 and 2030.

One factor in the most recent uncertainty is that China's coal use was thought to have plateaued in 2013.

Testing the pledges

This new piece of research is a joint effort between Yuan Jiahai, a professor at the School of Economics and Management at the North China Electricity and Power University, and Liu Qilin, visiting researcher at the University of Pittsburgh's Asian Studies Centre, plus Qi Lei of Guangzhou Power Supply Co, and Huiming Xu of the State Grid Information Centre. It focuses on China's energy consumption.

CO_2 accounts for 77% of greenhouse gas emissions worldwide, and 90% of CO_2emissions come from energy consumption, so CO_2 emissions from energy consumption are therefore the key to mitigating climate change.

In 2015, China became the first major developing nation to commit to a carbon peak, by submitting its voluntary nationally determined contribution to the UN ahead of the Paris climate talks. It pledged to push for peak carbon by 2030, and cutting carbon intensity – the amount of carbon produced for a unit of energy – by 60%-65% on 2005 levels. Analysts considered this an achievable target, with some seeing headroom to reach 70%.

Next came the China Energy Revolution Strategy 2016-2030, published in April by the National Development and Reform Commission, reiterating China's commitment.

The researchers scrutinised China's national goals against current performance, and predicted that by 2030 carbon intensity may be 65%-67% lower on 2005 levels – marginally beating the target of 65%, set in the official climate commitment,

Under this scenario, China's carbon emissions from energy consumption would still increase by 0.9% a year between 2020 and 2030, reaching 11.31 billion tonnes in 2030. "That means China may see peak carbon in 2030, but there is little chance of it happening earlier," the report says.

"China's 2030 climate commitment did not meet the expectations of the international society," noted Yuan Jiahai. "There is no doubt that China can achieve its 2020 and 2030 energy revolution goal, but these goals are not challenging enough to motivate China to go the extra mile."

Coal conundrum

The paper notes that the China Energy Revolution Strategy 2016-2030 assumes China's coal consumption will rise slowly up until 2030. Between 2013 and 2016 actual consumption of coal dropped 10.9%, though it has since resumed rising. Changes in coal consumption will have a huge impact on emissions performance.

Yuan Jiahai told *chinadialogue* that China's carbon intensity fell 20% between 2006 and 2010, and 21.8% between 2011 and 2015.

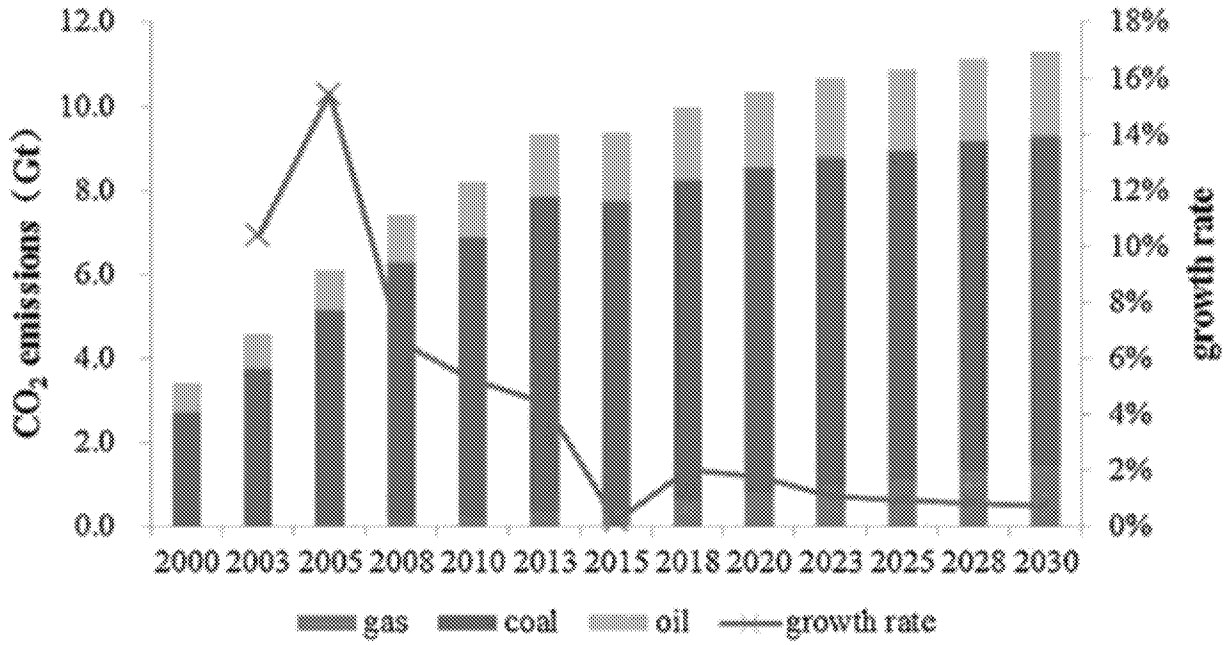
Ambitious scenario

The paper argues that China is capable of lowering energy consumption further and achieving more ambitious energy and carbon intensity targets, meaning an earlier carbon peak around 2023.

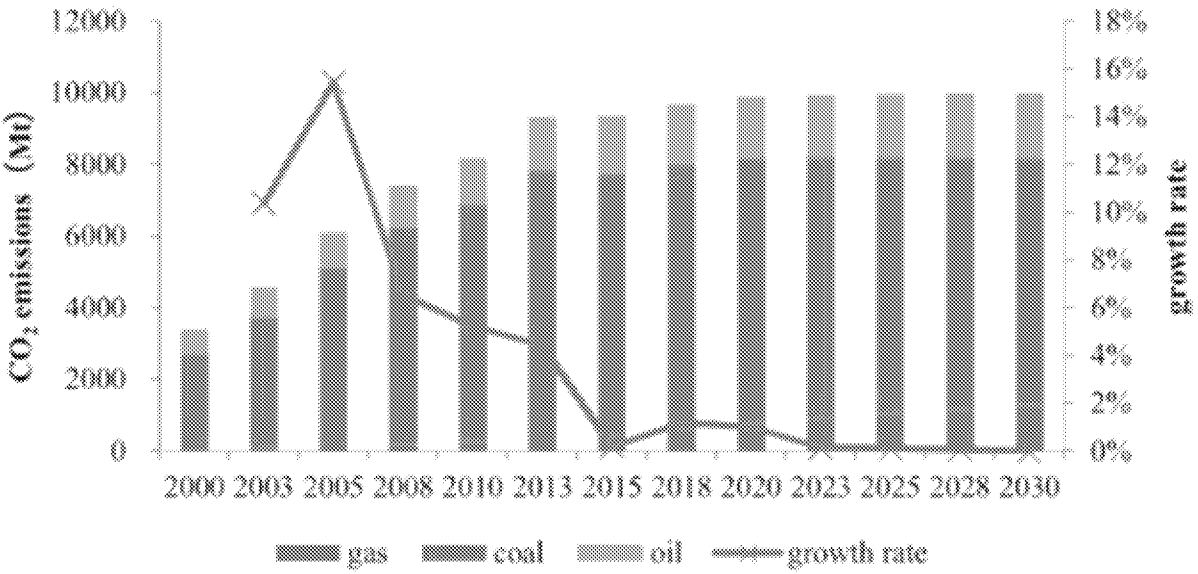
The researchers obtained this outcome by modelling the impact of what they call "the ambitious energy efficiency scenario", an optimal scenario based on rapid economic restructuring, albeit fully in line with existing policies. It envisages an accelerated transition in the manufacturing sector towards high-tech, high value added industries, light manufacturing, and greater use of energy saving technologies.

This strategy could bring GDP carbon intensity down by 71% from 2005 levels by 2030, and reduce coal consumption to 9.9 billion tonnes – 12% less than the NDRC's scenario.

The ambitious energy efficiency scenario would also see carbon emissions from energy consumption effectively stop increasing on 2005 levels between 2020 and 2025, with a peak and plateau from as early as 2023.



China's CO_2 emissions by energy use under the Energy Revolution Strategy scenario, 2000–2030. Source: Authors' calculation based on NDRC (2017) and NDRC and NEA (2016).



China's CO_2 emissions by energy use under a high energy efficiency scenario, 2000–2030. Source: Authors' calculation based on NDRC (2017) and NDRC and NEA (2016)

"China can totally bring its energy efficiency up to the next level. The China Energy Revolution Strategy 2016-2030 will take China through an energy trajectory similar to the ones developed nations have gone through, but by adopting the ambitious energy efficiency scenario China has the chance of becoming a global model for energy efficiency," said Yuan, adding that a more ambitious China is crucial for talks at the UN climate talks held at Bonn.

Shifting growth patterns

The report asks if continuous energy intensity reductions are possible over decades, especially as many of the most readily obtainable "low hanging fruit" efficiencies in heavy industries such as coal, steel and chemicals have already been achieved. It concludes that restructuring towards high-tech and light manufacturing will play the "principal role" in lessening energy intensity after 2020.

Yuan told *chinadialogue* that other factors helping China achieve the higher target would include a broad shift away from economic reliance on exports and energy-intensive manufacturing to growth driven by consumption and services.

China also needs strict energy efficiency standards for new buildings, and to continue to eliminate excess steel capacity.

The study argues against over-investment in renewables, as controlling power consumption with energy efficient technology can have a greater impact on carbon intensity with less equipment, reducing the need for the grid to absorb large quantities of renewable energy.
https://www.chinadialogue.net/article/show/single/en/10232-China-could-peak-carbon-emissions-in-2-23?mc_cid=ba2007c6dd&mc_eid=50973a4ce9

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